



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/815,999	04/02/2004	Jim Vogeley	4209-41	7278

23117 7590 03/21/2006

NIXON & VANDERHYE, PC
901 NORTH GLEBE ROAD, 11TH FLOOR
ARLINGTON, VA 22203

EXAMINER

AGUIRRECHEA, JAYDI A

ART UNIT	PAPER NUMBER
----------	--------------

2834

DATE MAILED: 03/21/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/815,999

Applicant(s)

VOGELEY, JIM 

Examiner

Jaydi A. Aguirrechea

Art Unit

2834

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 23 January 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-152 is/are pending in the application.
- 4a) Of the above claim(s) 18-47, 65-90, 95-99 and 118-152 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-17, 48-64, 91-94 and 100-117 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 2/06, 8/04.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election without traverse of Group I (claims 1-17, 48-64, 91-94, and 100-117) in the reply filed on 1/23/06 is acknowledged.
2. It should be noted that claims 69 and 70 were not examined along with the claims elected in group I, since the limitation of an "analog input signal" is not disclosed in claim 59 –to which claims 69 and 70 depend from. It appears to be a typo and claims 69 and 70 should be dependent from claim 65.

Information Disclosure Statement

3. The information disclosure statement (IDS) submitted on 2/28/06 was filed after the mailing date of the Election on 1/23/06, before the non-final rejection. The submission is in compliance with the provisions of 37 CFR 1.97. Accordingly, the information disclosure statement is being considered by the examiner.
4. The Examiner notes that the Applicant presented an IDS stating that "the listed documents were cited in a first office action (mailed December 2, 2005) for related US patent Application Serial No. 10/815,999." This provided serial number is in error, since 10/815,999 is the serial number of the instant application.

Specification

5. The lengthy specification has not been checked to the extent necessary to determine the presence of all possible minor errors. Applicant's cooperation is requested in correcting any errors of which applicant may become aware in the specification.

Claim Objections

6. Claims 69 and 70 are objected to because of the following informalities: As explained above, claims 69 and 70 include the limitation of an analog input signal. These claims should be dependent from claim 65 and not from claim 59. Appropriate correction is required.

7. Claim 92 is a duplicate of claim 64, both dependent from claim 63; therefore claim 92 should be cancelled.

Claim Rejections - 35 USC § 102

8. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

9. Claims 1, 5- 6, 8-9, 11-13, 15-17, 48-51, 55, 56, 58-59, 61-63, 91, 93, 100-104, 108-109, 111-112 and 114-116 are rejected under 35 U.S.C. 102(b) as being anticipated by Wilson (US 5022258).

Wilson discloses a drive circuit which produces a drive signal for a device having a piezoelectric actuator (piezoelectric pump, column 1, lines 65-66), wherein the drive circuit is arranged to change dynamically (col. 2, lines 10-14) the drive signal during real time operation of the device (see description of the invention in columns 3-7, where Wilson describes the generation of signals according to the rate and volume of flow, for example).

Art Unit: 2834

With regards to claims 5- 6, 8-9, 11-13, 55, 56, 58-59, 61-63, 93, 108-109, 111-112 and 114-116, Wilson discloses a sensor (25) to sense operational parameters, for example, temperature (col. 4, lines 9-12) and dynamic pressure sensor 41 (col. 4, lines 65-69). Wilson discloses changing the frequency in response to the sensed parameter (see column 4).

With regards to claims 15, 49 and 91, Wilson discloses the use of a pump (16).

With regards to claims 16, 17, 50-51, and 103-104, Wilson discloses the drive signal varying over time. Wilson is silent regarding the fact that a “non continuous dosage of fluid is delivered by the pump”. However, according to Wilson’s disclosure, it is inherent that the flow of the fluid depends on the signal, and therefore, the pump can deliver a non-continuous flow.

With regards to claims 100-102, the method of operating the device is inherent is the disclosure of Wilson. Therefore, claims 100-102 are rejected under the same grounds of rejection as claims 1 and 49.

10. Claims 1-4, 48, 52-54 and 94 are rejected under 35 U.S.C. 102(e) as being anticipated by Khoury et al. (US 20040145273A1).

Khoury discloses a driver circuit for high-speed actuation of piezoelectric actuators comprising a signal generator that produces a dynamic signal. Khoury discloses a voltage sensor (70) that generates a signal (72) representing the voltage of the driver signal (14). In paragraph [0039] is disclosed a control circuit (20) that changes the mode depending on how close the actuator voltage is to the desired voltage. Khoury discloses the control signals being pulse-width modulated (PWM) signals.

11. Claims 1-7, 48, 52-57, 94 and 105-107 are rejected under 35 U.S.C. 102(b) as being anticipated by Clark et al. (US 6428134).

Clark discloses a controller for controlling the waveforms supplied to the nozzles and for transmitting the waveforms to the nozzles in order to eject the ink droplets. Clark discloses a piezoelectric print head (piezoelectric actuator) with a control system that modulates the signals. In the disclosure, he describes a desired mode of operation for a piezoelectric ink jet print head having frequencies of pulses being reinforced by the resonance frequencies of ink chambers which are associated with each ink nozzle, so that energy used for ink ejection is minimized. Therefore, the signal is considered to be changing dynamically during real time operation of the device.

Claim Rejections - 35 USC § 103

12. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

13. Claims 7, 10, 14, 57, 60, 64, 110, 113 and 117 are rejected under 35 U.S.C. 103(a) as being unpatentable over Wilson.

Wilson discloses the claimed invention as explained in items 9 and 10.

However, Wilson fails to disclose the sensed operational parameter of the device being the resonance of the piezoelectric actuator.

Wilson discloses that the sensor is in fluid communication that is responsive to a physical property. It is known in the art that the piezoelectric actuators are more efficient when driven at a frequency close to the resonant frequency of the device. The resonance of a piezoelectric actuator is a physical property of the device, and therefore, it would have been obvious at the

Art Unit: 2834

time of the invention was made to select the resonance of the piezoelectric actuator as the physical parameter to be sensed in order to generate a driving frequency close to the range of the resonance frequency of the device and provide an efficient device.

Conclusion

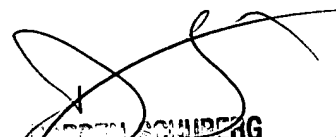
14. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. See PTO-892.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jaydi A. Aguirrechea whose telephone number is 571-272-2018. The examiner can normally be reached on M-Th 9-7.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Darren E. Schuberg can be reached on 571-272-2044. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


JAA
3/8/06


DARREN SCHUBERG
PATENT EXAMINER
EBC CENTER 2800